Abstract

Project Title: Identifying Patient Safety Indicators from Administrative Data

BACKGROUND / RATIONALE:
Ensuring patient safety has become a high priority for all health care systems. Little is known, however, about the number of potential patient safety events that occur during a hospitalization within the VA. Administrative data are a practical method for identifying in-hospital complications, and may therefore also be useful as a method for identifying potential patient safety events. In this study, we assessed the feasibility of using administrative data from the Department of Veterans Affairs to calculate Patient Safety Indicators, known as PSIs, that were developed by the Agency for Healthcare Research and Quality (AHRQ) and modified by the Evidence-Based Practice Center at Stanford University/UC-Davis.

OBJECTIVE(S):
Our specific objectives were to: 1) assess the ability of VA administrative data to identify potential instances of compromised patient safety in the inpatient acute care setting and to determine the construct validity of PSIs based on VA inpatient data; 2) validate the surgical PSIs using VA chart-abstracted data as the "gold standard" (National Surgical Quality Improvement Program, NSQIP); 3) identify factors that explain variation in PSI rates; 4) compare VA and non-VA PSI rates; and 5) explore variation in safety practices across selected VA facilities with low vs. high rates of PSIs .

METHODS:
We developed algorithms and other methods to adapt FY 2001 – FY 2004 VA Patient Treatment File (PTF) data for use with the PSI software. We obtained NSQIP data, and developed and applied methods to match NSQIP and PTF data to assess the sensitivity, specificity, and positive predictive value of the PSIs. We used hierarchical Poisson and Bayesian methods when comparing PSI event rates across VA facilities in order to control for statistical problems resulting from inherently low rates of PSI events. We obtained American Hospital Association (AHA) and VA NQIS (National Quality Improvement Survey) data to examine facility-level predictors of variation in PSI rates. We collaborated with AHRQ to set up comparable VA and non-VA databases in order to compare PSI rates across VA and non-VA settings (using AHRQ's HCUP databases). We developed an interview protocol, recruited four VA facilities for site visits, and implemented site visits to each of these facilities to explore variation in safety practices.

FINDINGS / RESULTS:
A paper on adapting VA administrative data for use with PSIs appeared in an AHRQ/DoD compendium on patient safety early in 2005. A paper evaluating the applicability and suitability of the PSIs on VA data appeared in *Medical* Care, September 2005. Preliminary study results were presented to the VA National Center for Patient Safety in the Fall of 2004. Extensive analysis of the statistical properties of the PSIs and other associated variables on VA data across multiple years of data (FY 2001-2004) confirmed findings that VA administrative data are a rich source of information on safety and quality, and can be used to identify potential instances of compromised patient safety. Hospitalizations with PSI events were consistently associated with greater lengths of stay, higher estimated costs, and higher mortality rates, compared to hospitalizations without PSI events. We identified 10,974 PSI events in the VA nationwide in FY'01 and 12,165 in FY '04. Observed PSI rates per 1,000 discharges ranged from 0.007 for "transfusion reaction" to 126.75 for "failure to rescue" in FY '04. Comparisons of VA and non-

VA risk-adjusted PSI rates showed that VA rates were slightly higher for 10 out of 15 relevant PSIs. We found some variation in rates across VA facilities and VISNs for several PSIs (decubitus ulcer, failure to rescue, iatrogenic pneumothorax, infections due to medical care, postoperative PE/DVT, accidental puncture/laceration). Certain surgical PSIs had moderately high levels of sensitivity when compared with NSQIP.

STATUS:
The project is essentially completed. There are a few activities still ongoing: 1) analyses comparing VA with non-VA data, including manuscript preparation; 2) preparation of a manuscript on the validation of the PSIs with NSQIP data; and 3) site visit data analyses and manuscript preparation.

IMPACT:
These findings should help target the VA's future patient safety and quality improvement initiatives at the national, VISN, and/or facility levels. Highlighting those PSIs with the greatest variation, highest frequency, and most serious clinical impact should also be useful to VA clinicians and hospital directors interested in improving specific areas of clinical care.